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Wang Lin

College of Economic and management, China University of Geoscience (Wuhan), China

Yuanyuan Nie

College of Economic and Management, China University of Geoscience (Wuhan), China

Huiqin Li

College of Economic and Management, China University of Geoscience (Wuhan), China

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Recommended Citation

Lin, Wang; Nie, Yuanyuan; and Li, Huiqin, "Research on Hotel Service Design from perspective of customer" (2014). *WHICEB 2014 Proceedings*. 79.

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Research on Hotel Service Design from perspective of customer

Wang Lin¹, Nie Yuanyuan^{2*}, Li Huiqin³

¹College of Economic and management, China University of Geoscience (Wuhan), China

² College of Economic and Management, China University of Geoscience (Wuhan), China

³ College of Economic and Management, China University of Geoscience (Wuhan), China

Abstract: This paper tries to place the notion of hospitalities service design with concern of service design theory. Then it accesses the hotel service design factors on customers satisfaction under the condition on different levels of service demands by means of experimental approach(N=120), in which display three categories service demands(must-be quality, one-dimension quality and attractive quality)may contribute to service design in hospitality industry through KANO model. At last it concludes that design factors have magnificent relationship with customer's satisfaction which helps managers to design service in luxurious hotel.

Keywords: Kano Model, consumer satisfaction, service design

1. INTRODUCTION

“Service design” has become popular last 30 years in electronic industry, production designs of Apple Inc. praise highly the service idea which is called “design - directed”, manufacturing a serious of products like iphone, ipad and Macbook ect, so as to private computers of Hewlett-Packard Company^[1].

Early in the beginning of last century, Sturt who was the pioneer in hotel industry has said that hotel offered unique goods known as the array of service items. Consequently, a majority of researches argue a lot about the issues of hotel service. Deluxe hotel ^[2] provides through-train items including catering, accommodation, entertainment or leisure activities which are worthy of being discussed by researchers among service sectors. Nowadays most of researchers pay attention on hotel decoration design more than arranging service activities in hospitality industry. Furthermore, although some researchers argue about service design, they are mostly qualitative conclusions without any quantitative analysis.

This paper proposes a specific approach to analyze the service design, examining the relationship of hotel service design elements and consumer demands through empirical method. This approach (Kano Model) proposed here was originally developed to investigate demands of quality control (KNAO,1979), In addition, original characteristics of the service design are reviewed in order to establish the theory of hotel service design which is a new field right now. We conclude the paper with a discussion of the research opportunity that could apply to service design in deluxe hotels.

2. LITERATURE REVIEW AND DEFINITION OF NEW CONCEPTION

2.1 Service design

This paper gives some information from the literature dated back to 1995 both form home and abroad. The author searched the papers mainly in there Chinese databases and four foreign databases(EBSCO , Elsevier, Science, Springer). The key words are service design, service management and service development as title. There were 105 pieces of relative papers in china and 197 relative papers abroad till the June, 2013. These articles analyzed these literatures and could be divided into five main problems, containing influence factors,

* Corresponding author. Email:nyy.0909 @163.com; (Nie Yuanyuan)

customer participation, knowledge management development performance and design methods or tools.

Firstly speaking for influence factors, there existed some typical views. De Brentani^[3] argued that it was vital to affect design that service corporation didn't have systematic and structuring process., while Xu Yanqing(2010) concluded that effective factors mean organize culture, communicating, leading, decision structure, professors and authorization . In 2004, Matting pointed out the necessary to learn from customers due to their opinions more important than experts from aspects of consumer participation. Koji Kimita (2009) created a customer value model to develop sustainable service design, discussing the relationship of two dimensions, attention and satisfaction of service functions. Wang ling ect.(2009) analyzed that interaction with customer was benefit to knowledge transition, absorption and integrations in the design processing by empirical method.

As third factor, knowledge management, is an important way to organization improvement, Eric Stevens (2004) noted that each organization learning ability and service design had positive correlation. Generally speaking, there were three factors affecting knowledge transition from the view of knowledge transition (Zhang Ruoyong,2007). Design of service has magnificent effect on satisfaction, the development was affected by four index including enterprise project, products, finance and customers (Griffin and Page, 1993). On the basement of Quality Function Deployment, Kurt Matzler (1998) discussed the importance of service characteristics and customer satisfaction. On account of Stage-Gate theory, Yuan Chuanxiao highlighted the standardization and practical.

In one word, service design although a newly branches, had intimate relationship with the ordinary product design. Researches adopted various methods to locate the characteristics of design in management field differing from the manufactory industry.

2.2 Hotel design

With the development of international hotel group like Hyatt, Marriott, the issues of hotel design have been cared by researchers abroad, then related studies has been done in this country. Zhang Xiqin(2002), who was the ex-vice president of National Tourism Administration, discussed that hotel need specialized design system such as airport and hospital, which can combine function with management style to achieve economic, socialize and environmental benefits. Fu Tianzhu(2003), who was the ex-general manager of Bei Jing Jianguo Hotel, proposed that the success of a hotel design attributed to create an balance environment mixed with inner and outer space which was of durability, reliable and practical. In fact, most managers focused the shape of the building and costs, neglecting whether the design could meet the staffs and customers' demands. Han Nan (2012)put forward there characters for hotel design, which are highly specialize, adapting to market discipline and reflecting the differences of region and culture. Although these problems had been talked about by architecture designers, it didn't get through to managers of hotel. During the period of construction, senior leaders of hotels pay little attention on how to reach integration of design and service.

On the aspect of researchers from tourism field, Tang Song(2005) put forward some elements should be used to design the guestroom like space, light and color on the base of people oriented theory. Yu Dan(2004) thought the main problems were imperfect function, waste of finance and material and unbalanced design and pointed that design of culture location was performed by hotel surroundings and decorations. Liu Xiaoquan(2006) concluded there were disjunctions between design and operation, due to going after the standards of hotel which led to a leak of characteristics and styles.

Generally speaking, hotel combines design of architecture and space and design of service and management. From the narrow description, it is defined as "finishing design"(Song Luming,2012).The differences of the two conceptions may be caused by distinguished understanding of hotel design goal and the deficiency cooperation.

2.3 A definition to hotel service design

After reading numbers of literatures, it is obvious that there is no clearly definition between these two conceptions. However, hotel service has become one of the hot issues at this service-economy time. The problem of hotel service can help to deepen the study on how to improve guests' satisfaction [4].

For sake of elaborating on this new issue, Hotel service design should create its own concept and discuss separately. The author puts forward that hotel design takes service as core conception. Hotel service keeps to create better environment of hotel, providing for staffs and customers with working and experience respectively.

3. METHODOLOGY

The first major of this issue is definitional which has done in the former. We now have the conception of hotel service design. as for this issue, there are many problems which cannot be solved at once which it is in accordance with rule of scientific research. The author just talked one of the most important problems as follows.

3.1 One hypothesis in hotel design service

This paper focuses on hotels which belong to high-star levels in china urban city, or those hotels with high rate, which the charge per night is equivalent to one tenth of house price in one city. Then it discussed a hypothesis that whether design elements and consumers demands and satisfaction are correlative. Then the conclusion could give foundation of hotel service design process. This paper used KANO Model from the perspective of customers to analyze the correlation of the two kinds of factors [5]. According to Kano's theory, there exist different kinds of demands, which lead to different satisfactions (Kano, 1984). It is vital to classify the guest's demand so as to find the best way to design service in hotel [6]. Therefore, this paper is done by 5 steps as follows.

- Step 1: Determining the demand factors and design elements in luxurious hotel
- Step 2: Introduction to the KANO model.
- Step 3: Designing and collecting Questionnaires
- Step 4: Data analysis.
- Step 5: Conclusion.

3.2 Identify the factors

The paper assumed SR as variable of service requests or demands, $SR = \{SR_1, SR_2, \dots, SR_m\}$ while SA is of service designing factors or elements, $SA = \{SA_1, SA_2, \dots, SA_n\}$. Then it adapted brain storm and literature review, concluding seven factors for SR and sixteen for SA. It shows in formula. That is to say this part meant to identify Kano's categories for each demand or attribute. A 5-score Likert scale was used, ranging from 5 to 0 score. Additional, the value of d had six figures, $d = \{0, 1, 2, 3, 4, 5\}$. It expressed the level of satisfactions attributing to different demands of designs, while the higher score stands for higher satisfaction. At last, we got a matrix as follows. The matrix d_{ij} refers to the satisfactory level set on SR_i concerning about SA_j

$$D = \begin{bmatrix} d_{ij} \end{bmatrix}_{m \times n} = \begin{matrix} & \begin{matrix} SA_1 & SA_2 & \dots & SA_n \end{matrix} \\ \begin{matrix} SR_1 \\ SR_2 \\ \vdots \\ SR_m \end{matrix} & \begin{bmatrix} d_{11} & d_{12} & \dots & d_{1n} \\ d_{21} & d_{22} & \dots & d_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ d_{m1} & d_{m2} & \dots & d_{mn} \end{bmatrix} \end{matrix}$$

3.3 KANO model of customer satisfaction in hotel

KANO model originates from Two Factors Theory or Motivator-Hygiene Theory of Herzburg. Then in 1978, Nirikaki Kano and Fumio Takahashi established a new model to explain three different levels of customer's

demands——must-be quality, one-dimensional quality and attractive Quality. Apart from these three qualities, another two qualities (indifferent quality and reverse quality) are not discussed because these did not affect satisfaction strongly or the satisfaction decreased with the increasing of service performance. $S_i(d)$ means degree of satisfaction ($0 \leq d \leq 100$, $i=1,2,3$). In particular, when a guest gave commend $d = 2$ on the must-be quality demand with 86 score, it means $S_1(2) = 86$. There are details about former three qualities as follows [7].

1. Must-be quality. It means some necessary service items in hotel such as security, tidiness ect. Customers become dissatisfied or unhappy when this kind of service quality is low or even not exist. However in fact, the satisfaction level does not increase if the staffs in hotel provide better performance of these relative services. The relations between variables conforms to logarithmic relationship:

$$S_1(d) = a_1 \ln(d) + b_1 \quad (1)$$

2. One-dimensional quality. According to the theory of Nirikaki Kano, this quality satisfaction is a linear with the service performance. If staffs provide the higher quality product or service, the customers would get more satisfactions vice versa. Then the values of satisfaction and level

$$S_2(d) = a_2 d + b_2 \quad (2)$$

3. Attractive Quality. This quality has magnificent effect on customer satisfaction. It always refers to surprise specially for some guests which leads to satisfactory.

$$S_3(d) = a_3 \exp(b_3 d) + c \quad (3)$$

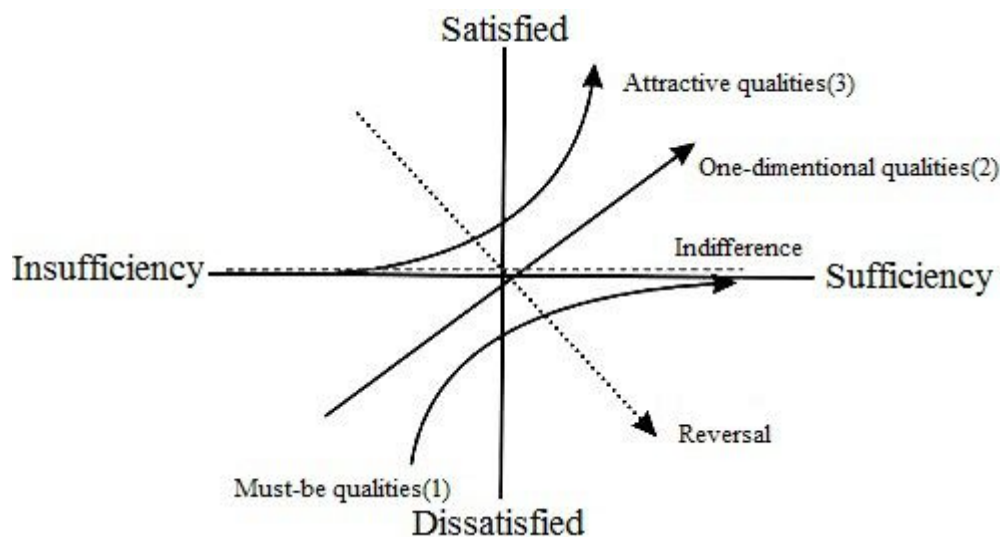


Fig 1. Kano Model of customer satisfaction

4. CASE STUDY

We have the field study in a deluxe hotel in Wuhan which has newly operated since Dec.12, 2012. It took three days to get the questionnaires in the lobby of hotel at random sampling in June, 2013. 120 pieces of questionnaires had been hand out and then we got back 112 pieces of effective questionnaires.

The questionnaire comprised two parts. First part questions were satisfaction level of design element to service demand. And the second part asked guests to give score S_i to measure the degree of satisfaction. Then We got the average of d_{ij} and of $S_i(d)$ to regression analysis. The details of SR and SA items are listed [8].

Table 1. Details of SA_i and SR_j

SA		SR		SR	
SA ₁	Respect and identity	SR ₁	Accessible and convenient design of space	SR ₉	Convenient service facilities
SA ₂	Privacy	SR ₂	Perfect combination of decoration and service atmosphere	SR ₁₀	Comfortable service waiting
SA ₃	Moderation of service	SR ₃	Bright light but not over dazzling	SR ₁₁	Multiple service activities in hotel
SA ₄	Excellent hardware service	SR ₄	Airy space with pleasant smell	SR ₁₂	Excellent personal service
SA ₅	Free to select services activities	SR ₅	Appreciate temperature in hotel	SR ₁₃	Convenient to get information about service
SA ₆	Comfortable public area	SR ₆	Reasonable passageway design	SR ₁₄	Good access to get knowledge about service
SA ₇	Excellent of software service	SR ₇	Kindness staffs	SR ₁₅	Effective communication during service contact
		SR ₈	Attendants with kills	SR ₁₆	Satisfactory after complaints

4.1 Data in matrix D

The first part information was concluded a matrix D which illustrated consumers' satisfaction about hotel design (table 2).

Table 2. Information system levels D^T

	SR ₁	SR ₂	SR ₃	SR ₄	SR ₅	SR ₆	SR ₇
SA ₁	3.51	3.12	4.2	4.85	4.29	4.69	0
SA ₂	2.78	3.46	2.98	2.51	3.52	3.87	0
SA ₃	4.32	4.62	4.8	4.6	0	4.1	0
SA ₄	0	4.5	4.21	4.91	0	4.5	0
SA ₅	0	0	4.58	4.95	4.12	4.52	0
SA ₆	3.2	4.6	3.1	4.87	4.76	4.85	0
SA ₇	4.78	4.35	4.65	0	4.97	0	4.6
SA ₈	4.57	4.6	4.67	0	3.01	4.2	4.7
SA ₉	4.5	4.26	4.8	4.23	4.47	4.57	0
SA ₁₀	3.2	3.12	3.8	4.5	4.35	4.43	4.57
SA ₁₁	4.8	4.91	4.03	4.66	4.9	4.77	4.69
SA ₁₂	4.5	4.56	3.8	3.82	4.1	0	4.3
SA ₁₃	4.62	4.65	4	4.86	4.89	4.36	0
SA ₁₄	4.2	4.5	4.6	4.2	0	4.21	4
SA ₁₅	4.6	4.31	3.96	3.8	4.56	4.12	4.5
SA ₁₆	4.89	4.6	4.2	4.6	4.01	0	4.87

In this table, there existed many d equals to zero, this did not means respondents give the zero score, but in fact the scores were less than 2, some even less than 1. So, we can conclude that the two factors were insignificant relative and record as zero.

We picked the array of largest numbers to analyze the relationship, the highest score of $d_i = \max d_{ij}$,

($i=1,2,\dots,16$), which the figure was highlight like 4.85. This meant the SA_i (the design factors) had satisfy guest right now. At the same time, the design factor may be emphasized by guests.

$$\max d_{ij} = \{d_{14}, d_{26}, d_{32}, d_{44}, d_{54}, d_{66}, d_{75}, d_{87}, d_{93}, d_{104}, d_{112}, d_{122}, d_{135}, d_{143}, d_{151}, d_{161}\} \\ = \{4.85, 3.87, 4.62, 4.91, 4.95, 4.85, 4.97, 4.7, 7.8, 4.5, 4.91, 4.56, 4.89, 4.6, 4.6, 4.89\}$$

4.2 As f Regression analysis for classifying Kano categories

According to two parts of questionnaire, the data was handled by SPSS 16.0 through regression, and established the former into three fitting functions, including logarithmic, linear and exponential. Then the one with the highest Fitting coefficients R value would be the best function express. The conclusion showed there existed $R_{ij} > 0.9$ with 0.95 confidential intervals, and it supported the hypothesis, which meant there was significant relationship between service design and consumer satisfaction.

Furthermore, as it illustrated in table 3, we chose the function with the highest R value to measure the satisfaction degree. In another word, SR_1 and SR_2 belonged to must-be quality in hotel. SR_4 , SR_5 , SR_6 and SR_7 were all one-dimension quality, while SR_3 was the attractive demand for consumers in hotel

Table 3 . Fitting Functions and Corresponding Fitting Coefficients R for Service Requirements

SR	Log 函数	R_{i1}	线性函数	R_{i2}	指数函数	R_{i3}
SR_1	<u>$Y=49.724\ln x+13.209$</u>	<u>0.990</u>	$Y=19.89x+1.15$	0.986	$Y=0.424e^x+14.414$	0.922
SR_2	<u>$Y=50.642\ln x+20.15$</u>	<u>0.991</u>	$Y=19.31x+10.71$	0.940	$Y=0.396e^x+17.875$	0.858
SR_3	$Y=53.334\ln x+1.613$	0.897	$Y=23.06x-16.5$	0.965	<u>$Y=0.505e^x+9.055$</u>	<u>0.975</u>
SR_4	$Y=49.190\ln x+13.577$	0.959	<u>$Y=20.130x-0.614$</u>	<u>0.991</u>	$Y=0.388e^x+16.426$	0.980
SR_5	$Y=28.818\ln x+16.707$	0.949	<u>$Y=11.66x+19.32$</u>	<u>0.955</u>	$Y=0.236e^x+25.21$	0.928
SR_6	$Y=51.726\ln x+10.273$	0.962	<u>$Y=20.88x-2.840$</u>	<u>0.966</u>	$Y=0.468e^x+11.93$	0.903
SR_7	$Y=55.811\ln x+10.191$	0.955	<u>$Y=21.6x-1.17$</u>	<u>0.992</u>	$Y=0.514e^x+10.67$	0.877

In the first level, respect and privacy were must-be qualities, which constituted of basic requests from consumers. Unlike the Maslow's hierarchy of needs levels, respect had become primary need with development of society. Hotel operators should take this as the basic rule of service principle, especially for the newly opened hotel to get the reputation at the shortest time. Once people got respected and feel protected, hotel could attract more guests ^[9].

Then on the second level, there were four types of demands. Excellent hardware, software service, comfortable public area and freely choices chances were relative with service performance. In other words, the better performance the attendant behaved, the higher the satisfactory got. The hotel star-level corresponds to the staffs performances and facilities performances, but attendant could not take the guest as the only consideration, but also the cost of the service, which was accordance with the actual cases.

The last one was attractive demand which can produce gracious benefits for the hotel if it would be totally achieve. Moderate service meant the service performance neither inadequate nor excessive. In the questionnaire, when d_{ij} equaled to 5, the average value to moderate service equaling to 80.5 which was largely lower than another demands. On one hand, some attendants served the guest over friendly or overly passionate which could give an expression of asking for tips. On the other hand, some one noted that unappropriated service performance may weaken the satisfaction ^[10].

5. CONCLUSION

What brings the majority of benefits is the quality of hotel service, which is due to the satisfaction of consumers. Therefore, it has been business of managers to improve products quality in hotel as well as the service performance. The issues of hotel service design have not been discussed when getting approach to improve service quality in all fields ^[11]. Compared with the researches about hotel service, hotel service design has been mixed with hotel design without direct explanations but experimental conclusions. Then this article elaborates the conception of hotel design service, and concludes that hotel service design can provide better service products and create more pleasant atmosphere to work for staffs in hotel, for the sake of a magnificent service experience. This paper provides a hypothesis and then analyzes the design factors influence.

(1) It supports that the hypothesis that design elements and consumers' demands and satisfaction are correlative.

(2) Different design factors have different effects on various demands.

Table 4 Classification of service demands and design factors

SR	Description	Classification	Design factors(Maxd _{ij})
SR ₁	Respect and identity	Must-be quality	SA ₁₅ , SA ₁₆
SR ₂	Privacy	Must be quality	SA ₃ , SA ₁₁ , SA ₁₂
SR ₃	Moderation of service	Attractive quality	SA ₉ , SA ₁₄
SR ₄	Excellent hardware service (guestroom, restaurant, entertainment department)	One-dimensional quality	SA ₁ , SA ₄ , SA ₅ , SA ₁₀
SR ₅	Free to select services activities	One-dimensional quality	SA ₇ , SA ₁₃
SR ₆	Comfort of public area	One-dimensional quality	SA ₂ , SA ₆
SR ₇	Excellent of software service (besides hardware service)	One-dimensional quality	SA ₈

This paper analyzed seven kinds of consumer requests level at the 16 type of service design factors, then classified the requests into three categories(must-be qualities, one-dimensional quality, attractive quality) which provide foundation to achieve appropriate service design. Generally speaking, managers should care the costs of various service items no matter which categories the demand is. When the demand belongs to the must-be quality, it will get high returns with low input. At the same time, attractive service aims at high input with high returns. And the one-dimension quality's benefits or return is between the two former qualities'.

Design factors have effects on satisfaction which is illustrated in table 4. Firstly, five factors including multiple service activities, lights, dealing with complaints and communication are the first level. Then, seven factors constitute the second level. Lastly, convenient facilities and getting information located in third level. This classification helps hotel managers to understand service function and have a better arrangement on service.

Speaking for maxd_{ij}(i=1,2.....16) design factors are divided into three category. SA₁₅, SA₁₆, SA₃, SA₁₁, and A₁₂ has significant effects on must-be qualities, so we can conclude that these design factor are must-be design factors for deluxe hotel. At the same time, SA₁, SA₄, SA₅, SA₁₀, SA₇, SA₁, SA₂, SA₆, and SA₈ may influence one-dimensional qualities, and these nine design factors may have the characteristics of one-dimensional qualities. At last, SA₉ and SA₁₄ may be the most important design factors, and hotel management should pay more attention on both.

However, this paper still has some shortcomings. The survey was limited to a hotel which can adapt to the similar hotels to design service so as to the conclusion is not common in all levels of hotel. Beside the article discuss the problems from the perspective of consumers. The author will take further study from the view of attendants or staffs in hotel.

ACKNOWLEDGEMENT

This research was supported by the National Natural Science Foundation of China under Grant 71203204.

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